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US005914763A

**United States Patent** [19]**Fujii et al.****[11] Patent Number:** 5,914,763  
**[45] Date of Patent:** Jun. 22, 1999**[54] LIQUID CRYSTAL DISPLAY WITH  
SUBSTANTIALLY EQUAL RESISTANCES  
FOR SETS OF TERMINAL ELECTRODES  
AND INCLINED WIRING ELECTRODES****[75] Inventors:** Tatsuhisa Fujii; Mitsugu Katayama,  
both of Mabora; Tomohide Ohira,  
Yokohama; Tatsuyuki Fumikura;  
Hitomi Madokoro, both of Mabora, all  
of Japan**[73] Assignees:** Hitachi, Ltd., Tokyo; Hitachi Device  
Engineering Co., Ltd., Mabora, both of  
Japan**[21] Appl. No.:** 09/056,780**[22] Filed:** Apr. 8, 1998**Related U.S. Application Data****[63]** Continuation of application No. 08/523,842, Sep. 7, 1995,  
Pat. No. 5,757,450.**[30] Foreign Application Priority Data**

Sep. 8, 1994 [JP] Japan ..... 6-214785  
Sep. 8, 1994 [JP] Japan ..... 6-214825  
Sep. 12, 1994 [JP] Japan ..... 6-216857

**[51] Int. Cl.<sup>6</sup>** ..... G02F 1/1345; G02F 1/1343**[52] U.S. Cl.** ..... 349/149; 349/143; 349/150;

349/152

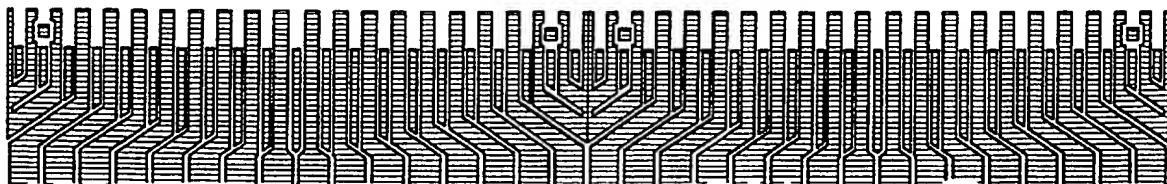
**[58] Field of Search** ..... 349/143, 152,  
349/150, 149**[56] References Cited****U.S. PATENT DOCUMENTS**

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LLP**[57] ABSTRACT**

A liquid crystal display including a plurality of parallel display electrodes wired over an electrode substrate, terminals for the display electrodes led out to the end portion of the electrode substrate and connected to TCPs, the terminals having pitches smaller than those of the display electrodes, and leadout wirings for connecting the display electrodes and the terminals. The leadout wirings each consist of a portion extending from a respective display electrode as it is, a portion extended from the respective terminals as it is, and almost parallel, inclined linear wiring that connects the two extended portions. The length of the two extended portions and the width of the inclined linear wiring are adjusted so that the wiring resistances of the individual leadout wirings are substantially equal.

**24 Claims, 27 Drawing Sheets**

The  
United  
States  
of  
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*Has received an application for a patent for a new and useful invention. The title and description of the invention are enclosed. The requirements of law have been complied with, and it has been determined that a patent on the invention shall be granted under the law.*

*Therefore, this*

United States Patent

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*If this application was filed on or after June 8, 1995, the term of this patent is twenty years from the U.S. filing date, subject to any statutory extension. If the application contains a specific reference to an earlier filed application or applications under 35 U.S.C. 120, 121 or 365(c), the term of the patent is twenty years from the date on which the earliest application was filed, subject to any statutory extension.*

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*Ollie M. Person*

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